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# Diagnosing the Roots of Chinas Growth Miracle: An Examination of Strategies That Have Most Influenced Chinas Economic Development in the Twenty-first Century

Katharine Manko

*Union College - Schenectady, NY*

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Diagnosing the Roots of Chinas Growth Miracle: An Examination of Strategies  
That Have Most Influenced Chinas Economic Development in the Twenty-first Century

By

Katharine Manko

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Submitted in partial fulfillment

Of the requirements for

Honors in the Department of Asian Studies  
and the Department of Economics

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June 2012

## **ABSTRACT**

MANKO, KATHARINE A. Diagnosing the Roots of China's Growth Miracle: An Examination of Strategies That Have Most Influenced China's Economic Development in the Twenty-first Century  
Departments of Asian Studies and Economics, June 2012.

There are significantly different views regarding what strategies underlie China's economic growth and development in the past decade. An examination of these varied opinions will indicate the complexity of determining which strategies have been most conducive to China's economic expansion. This paper will use data from several developing and developed countries along with an analysis of a number of strategies that economists and scholars have listed as aiding the economic growth process. The analysis of the scatter pot data will then be applied to China as a case study to determine which factors and strategies have been most conducive to encouraging economic growth for developing countries in the past and the extent to which growth has occurred in these countries over time. The data and literary analysis will then be used in order to examine which growth strategies China has followed and whether they have been successfully proven to facilitate economic growth for other developing nations as well in the past. The paper will conclude with which strategies appear to be the most and least relevant for China, as determined by the data and literary theories the country has previously employed in order to promote sustainable growth and further its development as a global economic powerhouse.

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# **CHAPTER ONE**

## **INTRODUCTION**

### *A. Thesis Overview*

It is no mystery that China has experienced rapid economic development over the last decade and questions have been raised by economists regarding which factors have most contributed to its success. This paper seeks to investigate these questions and provide research-based responses by examining data on literacy rates, bank loans, financing via international capital markets, trade, and comparing China's development to the growth paths of neighboring countries and the other BRICS nations. China will be compared with the results of other countries in order to identify which factors have been most conducive to its unique growth path.

In particular, since the beginning of the last decade, when China joined the World Trade Organization (WTO), the country's GDP has risen and employment options have multiplied due largely to the development of some of the liveliest cities in the world. This growth has created many opportunities for international trade and changed the population dynamics within the country by providing people from the countryside with education and jobs in urban centers. As a result of this phenomenon, the number of people living in poverty and import levels, which accounted for a significant portion of GDP ten years ago, have both been greatly reduced. China's positive average economic growth path over the last decade has raised a number of questions regarding which variables have been most influential to its ability to develop. This thesis attempts to answer these questions and contribute to an understanding of which factors are most significant in enabling growth within China as well as if they appear to be applicable to other countries as well (see scatter plots). Afterwards, I will analyze the results in order to

evaluate which aspects of Chinese policies, institutions, etc. are either hindering or promoting growth.

This paper is structured in the following order: I begin with historical background of reforms in China during the late 1990's followed by a literature review that briefly discusses publications along with detailed examples of growth strategies that economists and scholars believe are the most important in explaining growth in China and other developing nations. I will select data samples from the World Bank and other texts and include them in the literature review to explain which variables are most important to the growth process. Next, I created scatter plots for twenty-two countries that are close in geographic proximity to China to determine if these countries have followed similar growth trends over the past two decades. I used data for imports, exports, agriculture, population growth, and net national savings and presented each of these variables as scatter plots versus annual GDP per capita growth data. Additionally, I analyzed literacy rates, international financing via capital markets, trade surpluses and deficits, and bank loans to see how the data for China compared with the data for these other countries. I concluded this paper with remarks about which strategies discussed in the literature review appeared to be most relevant for China's growth based on the results of the empirical data. I also explained which theories for economic growth did not appear to be particularly influential in promoting China's growth in the past ten years, mainly due to lack of supporting empirical evidence.<sup>1</sup>

#### *B. Historical Background: China's Policy Changes Relevant to Growth Strategies*

These aforementioned institutional and policy changes date back to the late 1990s when China went through a series of educational, healthcare, and housing reforms. The restructuring of the education system during this time period along with the introduction of tuition fees resulted

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<sup>1</sup> I, as an author, was unable to find data to lend empirical evidence to some of the theories discussed in this paper.



in more students attending universities, better quality education, improved facilities, and higher salaries for faculty. The education system is controversially run as a bureaucracy because universities are judged based upon administrative rankings. Qian Xuesen, the father of China's space and missile program, expressed concern that schools were not nurturing talented students, which contributed to the reform efforts that were announced in 1995. These efforts include a "joint development" to benefit universities in affluent areas; increased investment from the central government to improve local universities within twelve provinces; "restructuring" the higher education system so that it was no longer run by non-education central ministries; and the "merging of universities." This reform became popular in the late 1990s because without new investment, universities came together to create stronger academic institutions with better management and administration.<sup>2</sup>

Other reforms occurred during this time period, which helped to structure China's economy and position it for growth during the next decade. Similar to the reorganization of the education system, the housing reform was proposed in the 1980s by Deng Xiaoping in response to heightened demand for living spaces. In 1998, several initiatives were launched including a welfare rental housing system to reform "work units" and a rent reform policy to encourage increases in home ownership and subsidized housing. The work unit funds that dealt with buying or building welfare housing became worker housing allowances and helped the poor to get more attention from the government. One recent development is the Anju Program, which helps to

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<sup>2</sup> Today, while more students and higher standards have been applied to the education system, there is controversy regarding the ranking system that formed from Projects 211 and 985. These projects formerly provided funding for the nine universities that are currently a part of the C9 league, which are considered to be the most prestigious institutions of higher learning in China (Zhao).

provide housing for low and middle-income households (Xiaohu 276).<sup>3</sup> In relation to the housing and education reform, changes in China's healthcare system also took place at this time.

Prior to the healthcare reform in 1998 when the State Council passed a national medical insurance policy, the government paid for the country's healthcare. The insurance policy is overseen by the Social Insurance Fund Administration Centre, a department of the Ministry of Labor and Social Security, that pertains mainly to middle-class employees. The overall reform heavily impacted urban areas and had four major outcomes: deregulation, administrative relaxation, corruption within the governance of the healthcare sector, lack of support for federal funding to hospitals as non-profit institutions within the market system; privatization of pharmaceutical companies along with less government regulation has enabled companies to establish relationships with medical doctors and health insurance system reform to cover part of hospital expenses for patients. As a result of the reform, individuals can pay an insurance premium for basic medical treatment, which has replaced the previous government-funded labor insurance medical system.<sup>4</sup> With regard to providing care, resources have been distributed to relatively wealthy areas based on market forces but the reform seeks to combine funding from both the government administration and "market function" based on regional economic conditions and cultural differences (Cui, Huang, and Ramey 39). These reforms show how historically, the government focused on ways to improve the quality of life for its citizens through increasing healthcare insurance opportunities, providing more housing for China's middle class, and improving educational standards for students. Thus, by implementing these

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<sup>3</sup> There currently is a debate regarding who should pay for this housing reform given scarcity of resources, funding, and the creation of institutions to facilitate housing delivery systems (Hamer).

<sup>4</sup> Currently, there is controversy regarding who will pay for healthcare, healthcare insurance policy decisions, and the complexity of providing appropriate care to people in different provinces.

aforementioned policies during the past decade, the Chinese government greatly contributed to the country's economic uprise.

As discussed, while education, healthcare, and property rights can contribute to economic success, countries must also focus on the main problems that hinder growth. One of China's biggest and most long-standing issues is controlling its burgeoning population. In "Demographic Dynamics and Economic Take-off", Yu Zhihao develops a theory of demographic dynamics and economic take-off through various tests to determine how effective family planning and other population control efforts have been in reducing population growth in China. The Chinese government believes that it has contributed to the country's modernization by addressing how China's population-control policies have affected its demographic transition as well as to what extent the transition has contributed to economic growth. According to Greenhalgh, family planning resources have prevented approximately 300 million births over the course of the three decades and continue to be enforced, namely for Chinese people of Han descent. Yu examines the "take-off effect", a situation in which economies begin to grow rapidly after an initial period of moderate growth (Greenhalgh 2003: 163; Yu 72). In conclusion, he discovers that indeed family planning has played a key role in altering the demographic trends and fertility rates throughout China in order to control the population.

## CHAPTER TWO

### STRATEGIES FOR GROWTH

Over the course of many decades, there have been several different strategies suggested by scholars that have contributed to economic growth. These scholars and the time periods their work range from include Jane Jacobs, an American-Canadian economist who wrote extensively about theories of urban development in the mid-nineteenth century, to Yan Xuetong, the current Dean of the Institute of Modern International Relations at Tsinghua University and Chief Editor of *The Chinese Journal of International Politics* (Oxford University Press). Xuetong's work was published in the early 2000s. In order to determine which strategies have been the most pertinent to economic growth in general, interpreted by Chinese context, I will discuss a heterogeneous mix of views in order to determine which are the most significant for China.

#### *A. Jacobs' Theory of Import Substitution*

One economist who has done a great deal of research on economic growth pertinent to China is Jane Jacobs. In *Cities and the Wealth of Nations*, Jacobs argues that growth is caused by import-replacement, a theory that an economy will substitute for some of its import activity by encouraging greater domestic consumption. This encouragement came from increasing the purchasing of goods and services within a country, which thus leads to increased domestic savings and can enable cities to continue developing. Some of the large returns from import-replacement can lead to new markets for different imports, job creation, technology, increases in agricultural yields, more employment opportunities, and "city-generated capital" (Jacobs 1984: 47). She explains that cities are created by attracting residents and tourists as well as offering an enormous range of options for working, living, shopping, politics, religious worship etc. but suggests that, "somewhere more than exporting or administration is required. That something

more is the capacity of the city to replace wide ranges of its imports exuberantly and repeatedly” (Jacobs 1984: 47). She uses the consumption of goods as a way of measuring a country’s developmental state. The more a city can encourage its own inhabitants to buy its domestically produced goods, and therefore spend money that will flow into its own economy, the more funding the country will have to invest in its people. Furthermore, when domestic spending increases as a result of a rise in the amount of goods and services consumed, it leads cities to prosper as well as to create new ones.

Jacobs supports her case by citing Dore’s *Shinohata: A Portrait of a Japanese Village* regarding how import-substitution can lead to increased economic growth. Dore uses a hamlet in twentieth-century Japan as an example of how urban development flourished due to the benefits of new technology, which made crop harvesting a more efficient process. The rise in crop production led to an increased supply for domestic consumption purposes as well as exports, which resulted in more trade and wealth opportunities for Japan. Tokyo served as a central city for trade and was built up by this advancement in technology. The text states that in the United States, “When finally the technology was put to work in Southern agriculture, yields increased stupendously. Of course, so did the productivity of farmers and their hired helpers. Therefore, surplus hired hands were laid off and sharecroppers were let go (Jacobs 1984: 83).” In Japan, new technology enabled the production of cash crops and commodities, such as rice and silk, to increase and gradually replace jobs. Families living in the rural hamlet were supported by the generation of young adults who migrated to large Japanese cities, namely Tokyo, to take advantage of job opportunities there. Advancements in technology have enabled people in the countryside to oversee machinery, which they were able to purchase with money sent home from youth working in the cities (Jacobs 1984: 51). This example shows in context how the cycle of

import-replacement continues and that cities develop according to changes in supply and demand as well as innovation. In this sense, cities essentially act as a way for people to benefit from information sharing, which, in turn, inspires the invention of new technologies that can improve daily life and promote growth.

Jacobs elaborates on this notion that cities are very entrepreneurial by stating that “development is a do-it-yourself process; for any economy it is either do it yourself or don’t develop” (Jacobs 1984: 140). She uses the example of Venice forming a trade relationship with Constantinople, which had a bountiful supply of luxury goods such as wool, copper, and furs. In order to develop and provide more goods and services for the population, Venice created a strong trade relationship with Constantinople and other developed nations with lucrative resources. These relationships enabled the country to become “the major market for European resource goods” (Jacobs 1984:142). Jacobs point in citing this case is that a country’s openness to trade and ability to form partnerships with surrounding countries of similar economic status is fundamental to encouraging development. As both partners begin to mutually benefit from trade by reaping the monetary benefits that result from a rise in the sale of goods and services, Jacobs stresses “the key to strengthening, diversification and ramification of their own and the others’ economies was the fact that the cities repeatedly replaced, with their own production, imports from one another” (Jacobs 1984:143). Thus, this theory of import-substitution is prevalent in case studies of countries that have experienced rapid economic growth and eventually lead a country to build up the capability to become more self-sufficient. Venice serves as a salient example of a nation that historically was able to successfully develop trade relations and thereby accumulate the capital necessary to create policies that encourage firms to sell goods domestically.

Additionally, in “Strategies For Helping Cities”, Jacobs argues that “a city employs two major growth and development mechanisms, each of which builds upon the other: it generates exports and replaces imports” (Jacobs 1969: 268). She uses a model developed by Romer to explain that trade is the driver of growth in major urban centers and that the constant outflow of exports leads to capital accumulation. In context, cities create trade opportunities because they are densely populated so there is constantly great demand for resources and plentiful labor to produce output for exports. She states that “from the vantage point of that city, also creates a greatly enlarged and diversified reservoir of potential export goods and services” (Jacobs 1969: 652). Since cities have such large populations of workers, they can create an enormous number of goods and services that can be used for trade. These applications for modern China are obvious because China has manufacturing shops that can create everything from clothing and footwear to car parts and Apple products and then sell these products to its own people without having to import them from abroad. The ability to produce its own goods is thus extremely conducive to the country’s economic growth.

Moreover, each country has different regulatory policies relating to trade, which can also affect capital returns and economic development. In the text, she discusses two programs the United States has in place to regulate trade and prevent economic and political crises from occurring. One example she uses are grant programs, which can be used to provide rules for how to solve problems and insure that many different cities concentrate on approaching the same collection of problems in similar ways (Jacobs 1969: 652).” One example of a grant program is construction regulations, which ensure that tax money is spent appropriately and that infrastructure is safe for public use. She advocates for a tax sharing system with localities, which would use tax money from military spending to ensure that tax revenue is being spent

appropriately. For example, ten-lane highways in China must be built according to specifications; otherwise, they would be unsafe for drivers and passengers. From a trade perspective, Jacobs also highlights that it's important for a country to manage its supply of technology and production resources as well as the exportation and importation of goods and services. However, she would not consider a country's management of its technology and resources to be completely planned and scripted as there are several different development processes at work.

### *B. Other Growth Factors*

Jacobs also discusses economic creativity as a significant factor in a country's development process because it can lead to improvements in technology, economic openness, and more efficient usage of resources. If creativity and entrepreneurial spirit are lacking, she suggests that potential consequences may include "lack of venture capital, racial and other ethnic discrimination, as far as access to capital is concerned; presence of monopolies, etc." (Jacobs 1969: 655). In order to better understand strategies that are conducive to urban development, Jacobs argues that data on a variety of economic indicators can measure whether a city or country is growing. One such indicator is imports and exports data, which represents the theory of import replacement. Import replacement shows the degree to which an economy is shifting from relying on imports from other countries to buying and consuming its own country's goods and services. The types of goods and services that are consumed by the domestic population are also of importance because they indicate how innovative the city is in terms of creating sophisticated products. The more complex goods a society is able to produce on its own, the less it has to rely on importing expensive inputs from abroad. Developed nations like the United States and Europe serve as examples because they are able to produce and form relationships



with economies that manufacture complex products at a much lower cost than it would to produce them domestically. Moreover, countries are constantly changing so over time, progress must be made with regard to continuing import substitution. For example, in the 1980s, Japan became an economic powerhouse and invested a great deal of its capital in R&D. This investment helped the country to produce new technology, such as Nintendo video games, and establish very strong trade relations with other large economies, like the United States. In America, consumers were in great demand for these Japanese products, namely because of their high quality and reasonable prices. In terms of empirical support for this example, in 1980, the annual percentage growth for exports of goods and services from Japan was 17% and in 1981, it was 12% (World Bank).

Another example of this development process that Jacobs provides is the bicycle that was created in Japan. As bicycles became a popular commodity, cities started to use resources to manufacture their own versions so that they would not have to rely on expensive imports to meet consumers' demands. This particular instance highlights the economic benefits of import-replacement, because it shows how economies can transition from relying on imports to becoming self-sustaining as well as focusing on how producing goods and services on a local level can promote growth. As an overview of this process, "the city earns more imports by adding export work to different work of their own, exporting their own local work, new uses of technology to increase rural production, continues to generate new exports and earn imports with local production" (Jacobs 1993). This method will lead to steady urban growth and while developing nations work to sustain and uphold a healthy economy, Japan thus serves as a model of a country that has taken these developmental factors into account and established itself through trade relations, technological advancement, and entrepreneurialism.

### *C. Trade Policy and Data Examples*

Over the past few decades, other Asian countries have developed more advanced technology and thus began to apply the concept of import substitution by producing more of their own video games domestically instead of importing them. Another factor is Japan's aging population, which reflects a sharp disparity between the elderly/baby boomer populations and the current generation of young adults. As a result of these factors, in 2001, Japan reported a decline of 10% in annual exports of goods and services (World Bank). As competition with Japan intensified, China's current trade with the United States alone has boomed because of its ability to produce complex technology, such as medical equipment and computer software (see Table 1).

In 2001, China's exports of goods and services, as measured by World Bank annual percentage growth data, grew at 10% and by 2010, it increased by an annual percentage of 30% (World Bank). Thus, as these examples demonstrate, countries must position themselves strategically over time to accommodate for competition with other nations and shocks. For example, a shock such as the aforementioned aging population situation in Japan could hit their economies and hinder economic growth.

Comparatively, the number of goods that are exported can also contribute to a significant difference in GDP and technical economic growth. For example, countries such as China, which have gained a tremendous amount of wealth from its export business, will eventually face competition from other developing countries where labor is cheaper and natural resources are more abundant. To combat this problem, it is important to determine the point of origin for these exports—whether they are being produced and sent from large organizations or if they come from sources that are manufacturing specifically for a local market. Historically, countries with

export-driven economies, such as modern-day Brazil, have indeed experienced rapid growth and booming trade businesses with other countries that can be attributed to these aforementioned reasons. Brazil's economy has become the seventh largest in the world and its GDP in US dollars has grown dramatically over the past ten years from \$644,701,831,101 in 2000 to \$2,087,889,553,822 in 2010 (World Bank). The country's exports have risen 50% in the past decade and it regularly exports sugar cane, beef, commodities such as soybeans, and oil to the United States and other large economies. Brazil has a unique climate, which enables it to have three crop seasons and today it faces the issue of resource depletion, which threatens its natural resource supply. As a result, the country is focusing on maintaining farmland, cattle raising, and improvements in technology that could potentially raise crop-harvesting levels (Baer). Furthermore, Brazil works with the World Wildlife Foundation to preserve the Amazon River, which provides minerals for its population as well as works to reduce its carbon footprint through collaborative efforts with NGOs, universities, and government programs (WWF Brazil Office). Similarly, China's export business has flourished as a result of high demand from the United States and other trade partners and its exports of goods and services grew by 95% between 2000 and 2010 (World Bank). Differently from Brazil's commodity abundance, China's natural resources are coal, iron, natural gas, and petroleum, which are conducive to the country's mass manufacturing capabilities (China Natural Resources Inc.). Furthermore, these resources help to support the Chinese economy and contribute to the production of goods to be sold domestically or exported abroad. Hence, exports can be a very important factor and indicator of a nation's progress in terms of economic growth.

While the development process for each country is complex and takes time, Jacobs indicates in "The City Unbound: Qualitative Approaches to the City" that there are several stages

of development that enable cities to steadily build up over time. Initially, a city with enormous growth capacity establishes trade partnerships with more developed cities in order to gain more monetary capital for businesses to start up. An example would be Shanghai establishing a trade relationship with major cities in the United States because the revenue the Chinese would earn from selling products to a population with high demands would provide more funding for entrepreneurial ventures. Once some businesses have the cash to operate, the funding enables the production of exports to greatly increase. This growth and the expansion of business services leads to a more diversified offering of products for consumers that the city will be able to replace. In terms of the example with Shanghai and the United States, this cycle has been able to take place because China continues to produce high-quality products, like Apple technology, that continue to rise in popularity in large foreign economies.

## **CHAPTER THREE**

### **ELEMENTS OF URBAN GROWTH**

#### *A. Continuation of Jacobs' Theories of Urban Growth*

Expanding on this last point, Jacobs states that thriving economic systems have five characteristics in common that help to fuel growth and prevent stagnation. The first element is open-ended development, which Jacobs compares to technology by stating that initially, any technology starts out in basic form and then becomes more complex over time as previous innovations and ideas are incorporated to improve it. Secondly, a city environment is very conducive to fostering expansion because there are so many consumers and resources available to businesses. Thus, a new business is likely to experience success in an urban setting rather than a more sparsely populated area, such as the countryside. Jacobs also mentions that self-maintenance and self-refueling are key in preventing growth from slowing and recently established economies from collapsing. She feels that like complex ecosystems, cities can maintain steady economic expansion because of bifurcations, positive-feedback loops, negative-feedback controls, and emergency adaptations (Jacobs 1993: 120). Bifurcations occur most likely due to whether political or religious beliefs lead to a divide amongst the population. For example, in Israel there are several religious groups, namely Jews, Christians and Muslims, who believe that Jerusalem is their homeland so the government implemented national policies to divide the city into quarters according to religion as well as to prevent political upheaval. A similar phenomenon occurred in China after the collapse of the Han dynasty (206 B.C.-220 A.D.), which promoted Confucianism and the division of the country into rival states. At that time, Buddhism began to gain popularity throughout the country, which caused a rift amongst people of different religious beliefs. The Tang dynasty (618-907 A.D.) later rejected Buddhism

and in 845 A.D., destroyed 4,600 Buddhist monasteries and 40,000 temples. In order to prevent the Buddhist and non-Buddhist populations from starting conflicts within society, Confucian scholars created Neo-Confucianism. Neo-Confucianism attracted the non-Buddhist population and simultaneously “Buddhism was similarly reformulated to be more consistent with Confucian principles regarding kinship” (Greif and Tabellini 6). These examples are useful in pointing out some continuities in Chinese history and showing that through policy-making, cities can adapt and adjust to any economic situations that could potentially divide their populations in order to promote positive growth.

Further, certain events can lead to positive or negative feedback loops depending on how they shift the economy; a positive feedback loop would contribute to the way a trend is currently moving, such as a rise in stock market activity leading to increased investor confidence. In contrast, a negative event could cause a trend to move in another direction, such as geopolitical unrest in the Middle East causing concerns about oil supply. Jacobs argues that cities can generally adapt to these situations through policies and multilateralism, which safeguards them from periods of recessions and negative shocks. These qualities attest to cities’ abilities to utilize capital and labor effectively in order to survive and grow. Historically, countries that have strong, positive relations with neighboring nations and developed countries like the United States are able to overcome any issues that may arise. For instance, when the earthquake struck eastern Japan in March 2011, resulting in a tsunami that destroyed dozens of communities and exposed thousands of people to harmful radiation, the United States and Japan’s other allies gathered resources to help the country recover from this natural disaster and prevent its economy from rapidly declining.<sup>5</sup> For example, the United States Red Cross raised millions of dollars for the

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<sup>5</sup> The 2011 Japanese tsunami/earthquake “began with a powerful earthquake off the northeastern coast of Honshu, Japan’s main island, which caused widespread damage on land and initiated a series of large tsunami waves that

Japanese Red Cross to provide victims with housing facilities, appliances, and other resources. Canada also contributed to the relief effort by raising funds for the Japanese Red Cross and sending over a Disaster Victim Identification team to help identify victims. These feedback processes therefore serve to encourage economic progress in a variety of situations.

### *B. Desrochers and Hospers' Technical Strategies for Growth*

Differently from Jacobs' interpretations, Desrochers and Hospers look at strategies for economic growth from a more technical perspective in their publication "Cities and the Economic Development of Nations." They seek to analyze and explore the significance of each variable included in the neoclassical growth theory and other hypotheses about the effects of international trade on development. Desrochers and Hospers work states that based on Robert Lucas' interpretation of Romer, the rates of economic growth and per capita income levels among developed and undeveloped countries, regardless of political policies, should at some point converge along the same growth path. While this concept is theoretical and based on data collected from several developed nations, Romer's "main innovation was to incorporate human knowledge or skill level" (Desrochers and Hospers 118). His theory of technical growth suggests that education and technology are extremely important and conducive to economic advancement and he provides support for this idea by citing Nobel Prize winner Robert Lucas' work on human capital.

Lucas defines "human capital" as being duplicitous in nature and according to his research, indicates that it takes a large degree of effort to obtain productive human capital that will yield positive results in terms of output. Secondly, Lucas mentions "the economy as a whole becomes more productive when the average levels of human capital in an economy are raised"

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devastated many coastal areas of the country, most notably in the Tōhoku region (northeastern Honshu). The tsunami also instigated a major nuclear accident at a power station along the coast."

([http://en.wikipedia.org/wiki/2011\\_Tōhoku\\_earthquake\\_and\\_tsunami](http://en.wikipedia.org/wiki/2011_Tōhoku_earthquake_and_tsunami))

(Desrochers and Hospers 120). Thus, the more productive workers are, the more output they are able to produce to be sold to the economy or to be exported abroad. Lucas also states “improvement in individual skills raised the productivity levels of other individuals without being adequately compensated (Desrochers and Hospers 122).” The skills he refers to are education, technology, and the ability to make workers smarter and more industrious in order to stimulate more economic development.

As Desrochers and Hospers describe, while someone can improve the economy, he is not necessarily “accounted for by the earnings market” (Desrochers and Hospers 122). For example, in the late 1990’s the Chinese government arranged for engineers to design the Three Gorges Dam in order to power electricity for a significant portion of the country’s population. As background, according to Kennedy’s “China’s Three Gorges Dam”, the Three Gorges Dam is considered to be the largest construction project since the Great Wall and symbolizes China's technological development in the new millennium (Kennedy). The idea for the dam was originally proposed by Sun Yat-sen in 1919 and thirty years later, Mao Zedong arranged for studies to be completed on damming the river (Kennedy). The human capital, which in this case is the education and training that the engineers received, enabled them to create the dam to then benefit society. Therefore, as this example illustrates, factors such as human capital cannot necessarily be quantified but play a significant role in the economic development process for different countries over time.

### *C. Lucas’ Human Capital Theory*

Economist Robert Lucas also examines these technical, unquantifiable factors that contribute to growth in his essay, “On the Mechanics of Economic Development.” Lucas states that “if trade in capital goods is introduced into this model world economy, with labor assumed



immobile, there will be no tendency to trade, which is to say no systematic tendency for borrowing and lending relationships to emerge between rich and poor countries” (Lucas 1988: 40). He focuses on factors such as capital, labor, and innovation and how they work together to stimulate growth. Lucas’ view contrasts with Jacobs’ theories because he argues that growth occurs as a function of the accumulation of capital that enables workers to become more productive and thus create more output. He uses trade as an example of how countries of differing developmental statuses can help each other by providing goods and services that may not be available in each respective nation. For example, China forming a trade relationship to export electrical equipment, apparel, and retail products to the United States thus provides the American population with goods that are constantly in high demand. Since these two countries have formed a trade alliance, American consumers can enjoy greater product offerings from China and the Chinese can earn a profit from exporting goods (see Table 2 for most popular Chinese exports).

Thus, as can be seen in the data above, Lucas’ focus on international relations demonstrates the critical importance for countries to develop connections with others in order to grow and support their own economies (US-China Trade Statistics). While he underscores the link between trade and development, he argues that there are differences amongst countries in terms of sustaining their expansion paths over time. He specifically points out that economies follow different growth patterns and therefore that the neoclassical model examines how different variables can contribute to this economic expansion over time. Thus, human capital cannot be considered a substitute for knowledge and technology in terms of encouraging economic development.

Lastly, Lucas indicates that in connection with his own conclusions about technical growth, Jacobs' theory relates in that "her emphasis on the role of cities in economic growth stems from the observation that a city, economically, is like the nucleus of an atom: If we postulate only the usual list of economic forces, cities should fly apart. The theory of production contains nothing to hold a city together" (Lucas 1988: 38). Her interpretation shows that as compared with Lucas' technical theory, it takes more than just capital and labor to drive an economy. For instance, cities are filled with large, diverse groups of educated people who can contribute to each of these discussed elements – capital, human capital, knowledge, labor, and technology. Engineers can incorporate their skills into designing bridges that can improve transportation between cities for the benefit of society. For example, the Hangzhou Bridge, which is one of the longest trans-oceanic bridges of all time and connects Shanghai with the Ningbo municipality, reduced travel time between the two landmarks by an hour and a half. Additionally, architects design skyscrapers to make living space for more people to move to cities, which then contributes to the build up of these urban areas over time, where jobs and resources are more readily available to consumers. Thus, cities' productive nature arises from a confluence of these factors over time.

## CHAPTER FOUR

### CHINESE SCHOLARS INTERPRETATIONS OF GROWTH

#### *A. Review of Xuetong's Historically and Politically-based Growth Strategies*

In addition to interpretations of technical growth and the development of credit markets contributing to a country's economic progress, modern Chinese scholars have their own particular views regarding China's recent growth. For example, Yan Xuetong states his belief that innovation, creativity, and human productivity are what lead to economic development because if more ideas translate to more efficient technology, then it can in turn lead to more economic prosperity. His theories specifically pertain to China and he "proposes that China should learn from Xunzi's recommendation of strategy for a rising power, which stresses human talent, that is, it focuses on competition for talent" and elaborates on his theory by expressing that the competition for talent is currently concentrated in densely populated areas within China and India (Yan 2011: 13). This untapped population means that there is room for potential human capital in undeveloped areas. He discusses historical strategies that have been used to search for talent and highlights that in the past, countries have hired foreign officials to encourage openness to other cultures and propose ideas to better structure society. For example, Arnold Schwarzenegger, who is originally from Austria, was selected to serve as governor of California and address immigration and financial issues. Another example is Golda Meir, who was originally born in the Ukraine, spent her adolescence in the United States, then later became Prime Minister of Israel and worked to improve relations with Israel's neighboring countries (Butt).

Similarly, Yan references that talented professionals and students often come to the United States in order to pursue opportunities, which gives America the advantage of having

exceptionally talented students and workers from around the world. Thirdly, he argues that based on historical trends, officials should be held responsible for their own mistakes. He points out that in the past, being assured lifetime job security is conducive to promoting corruption or laziness, which can cause a country's economy to decline. Thus, the establishment of independent think tanks and more frequent turnover of leaders would help to mitigate this issue. For example, Fidel Castro ruled Cuba for over five decades during which he promoted guerilla warfare and allied with communist leaders from the Soviet Union. His policies forced Cuba to become reliant on its own resources and increase the production of its commodities. In 2002, the government reorganized the sugar cane sector, which resulted in the closing of approximately half of the country's mills. The loss of these jobs created high unemployment and decreased the amount of sugar cane used for trade from 8 million tons in 1989 to 3.2 million tons in 2002-2003 (Cuba Agriculture.com). If there had been a defined limit on how many terms a leader could serve, Castro never would have remained in power for so long and Cuba could possibly have been able to establish relations with other countries to export its main commodity, sugar cane, and encourage economic prosperity. In economic terms, the country therefore stagnated as a result of Castro's policies. Conversely, intervention by citizens against long-standing leaders whose principles are viewed unfavorably by the domestic population can in turn make a difference in a country's rulership. For instance, in the late 1990's, Zhu Rongji rose to power and reformed China's education system. The election of a new leader introduced these new ideas and initiatives to the country, which focused on increasing government funding for universities in several different provinces, changing the management of higher education systems, and improving the quality of education offered in schools throughout China. These examples show

how leadership can directly affect a country's economic status and the critical importance of having a strong, innovative leader in place to promote economic growth.

### *B. The Role of Entrepreneurship in Economic Growth*

Additionally, Yan's theory also uses education as a means to stimulate innovation and expresses that given China's population of billions of people, there is enormous aptitude for entrepreneurialism. He states that with regard to highly developed areas, such as Shanghai and Beijing, which are filled with educated people from some of China's best universities, "at present, China's strategy of seeking talent is still mainly used for developing enterprises and has not yet been applied to raising the nation as a whole" (Yan, Bell, Sun, Ryden 2011: 14). Yan emphasizes that creating conditions that encourage creativity and foster economic growth are of paramount importance and advocates that economic openness is key to facilitating idea sharing. For instance, in 2003, Chinese entrepreneur Jack Ma came up with the idea to start the company Taobao, a Chinese version of eBay that primarily targets consumers in mainland China, Hong Kong, Macau, and Taiwan. By 2009, Taobao had 170 million users and "according to statistics, it processed 20.83 billion RMB worth of payment during 2009 and the transaction increased to 40 billion RMB in 2010, standing out as the giant of retail platforms in Asia" (Taobao.com). In 2011, Ma announced that the company would be divided into three different areas; eTao, which would specifically be used for shopping searches; Tmall, a business-to-consumer platform; and Taobao Marketplace, a consumer-to-consumer platform. Additionally, employees at Taobao offer free listings to sellers and computer scientists have developed instant messaging applications to improve buyer-seller communication. Further, an escrow-based payment tool, Alipay, was created as a way to expedite online transactions. Taobao encourages social trust amongst its users, which has helped to propel its user base and enable it to become a market

leader in mainland China. According to the company website, “its market share jumped from 8% to 59% between 2003 and 2005, while eBay China's slid from 79% to 36%. eBay had to shut down its own site in China in 2006” (China’s Pied Piper). Taobao’s success shows how education and entrepreneurialism can combine with modern day technology to facilitate sustained economic growth within a society over the course of several years.

Like the creativity initiative that contributed to the start of Taobao, in “The Path for China to Increase its Soft Power,” Yan further discusses his idea that the government is accountable for encouraging economic growth and strengthening social institutions and relations with other economies. He states that a country’s power depends on a combination of “soft power” and “hard power.” “Soft power” refers to a country’s ability to politically mobilize a nation, both internally and externally” and utilize all resources most effectively (Yan 2006: 1). The term originated from the philosopher Guan Zi (720-645 B.C.E.), who said that a legal system should have moral principles and earn trust from the population as well as form strong relationships with other countries. This way, allied countries can support each other as well as provide aid for each other in times of need, which in China’s case would contribute to economic openness and expansion of trade relations. In particular, in order for China to increase its “soft power”, Yan argues that social institutions must be organizationally reformed to increase the production of goods and services. He believes that for China to carry out this initiative, the country should bolster its international reputation by gaining the support of its neighbors and powerful nations like Europe and the United States. The relationships will in turn attract other countries to work with it. In terms of foreign policy, strong social institutions serve as a part of the government’s effort to develop preventative policies to combat international economic issues.

## CHAPTER FIVE

### WTO MEMBERSHIP AND OTHER REFORMS

Yan proposes that one way in which China can form a friendly relationship and build these connections over time is by putting diplomatic policies in place to structure the foreign relations process and strengthen institutions. For instance, when China joined the WTO in December 2001, it was then able to form better trade relationships with other member countries and work towards further establishing its position as an economic world power.

#### *A. WTO Diplomatic Policies*

As a historical example, when Nigeria joined the WTO in 1995, it helped the country to promote peace through Disarmament, Demobilization, and Reintegration programs and better manage its relations with the hundreds of ethnic groups that live together within the country's borders. According to WTO statistics, Nigerian exports of goods and services as measured in US dollars, rose 7.2% from \$24,820,549,289 in 2000 to \$76,248,124,979 in 2010. Between 1995 and 2010, the country's GDP grew 89% and the reorganization of government structure concentrated on enforcing stricter control of trade's role in promoting GDP. In 1995, trade composed 86% of Nigeria's GDP and in 2010 it comprised 66% of GDP. This data supports the WTO initiative to help the Nigerian government by increasing its export business and setting stricter regulations of imports. Since the government's decision to implement it, the import prohibition policy has helped to safeguard the economy from harmful weapons and food items that could wreak havoc on the population. Thus, in conjunction with its growing export business, joining the WTO has helped Nigeria to put in place policies that have helped to promote growth. Likewise, China has also benefited from joining the WTO because the organization has helped the country to establish further trade relations and increase its world merchandise exports (of goods and

services) from 194,931 in 1999 to 1,201,534 in 2009 (World Trade Organization). Lastly, as shown in these two cases, membership into the WTO helps its members to encourage strong government practices and improve the country's ties with other members, which, as shown by the aforementioned trade data, has proved to be a strategy for growth.

### *B. Chow's Analysis of WTO and Democracy*

Taking foreign policy into account, in addition to opening a country to the global trade market to increase export activity, Gregory Chow argues that membership into the WTO has led to structural changes in China's economic, legal and political systems. Membership affects the consumer behavior that is associated with these institutions as well as those that countries face when entering the WTO, such as lowering tariffs, which boost imports by augmenting export businesses. For instance, China will have to lower prices on products and improve quality in order to benefit consumers domestically. Entering into the WTO was thus a method of economic reform for China and led the way for growth in international trade and changes in output. Primarily, these gains result from a larger variety of foreign goods, tariff reductions, and an increase in the number of trading partners. Ultimately, a rise in imports will also stimulate growth of GDP and efficiency within each industrial sector. With regard to China, the comparative advantage of entering the WTO is that it will allow for more imports of agricultural products from other Organization members and exports of textiles and clothing, which are some of the leading goods produced within the country for worldwide trade. Moreover, WTO members have to deal with foreign firms on a more frequent basis so that intellectual property rights and legislature will have to be implemented to effectively regulate these relations. China's communist leadership is aiming to encourage democracy and according to the results of Chow's research, as people become wealthier and more educated, they will become increasingly involved



with democratic activities. Hence, the WTO could promote both demand and supply for a democratic form of government that favors the voice of its people over the ruling of a political leader. This democratic reform could eventually lead to more economic reforms.

### *C. Zhang's Beijing Consensus Growth Model*

In terms of other strategies for economic development, “The Allure of the Chinese Model” by Zhang Weiwei proposes that China has followed a model for poverty alleviation and successful economic development that differs from that of developed nations like the United States and post-soviet countries. He argues that China’s policies are focused on how decisions will affect its people in terms of modernization and says that it concentrates on entrepreneurship, globalization, and international trade. Zhang has furthermore abided by the “Beijing Consensus” by safeguarding China’s policies regarding when, where, and how to adopt foreign deals.<sup>6</sup> This instance shows that leaders are negotiating mainly for their own people rather than for bondholders. He compares the approach to America’s IMF-designed Structural Adjustment Program (SAP) for sub-Saharan Africa and “shock therapy” for post-soviet states. A SAP is an IMF and World Bank policy that is put in place in order for countries to earn lower interest rates on loans. The program has guidelines set in place so that all loans will be used to serve their intended purposes and reduce the budgetary imbalance of the country borrowing the loan. For developing countries, SAPs have historically helped them to become more “market-oriented” and focus on increasing trade opportunities as well as the production of goods and services (Murrell). Other approaches have also successfully helped countries to develop, such as shock therapy for Poland, which aided the country in transitioning from a communist economy to a capitalist system by privatizing many of its publicly-owned assets, releasing price controls, and

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<sup>6</sup> The Beijing Consensus is defined as a term that represents an alternative economic development model to the Washington Consensus of market-friendly policies promoted by the IMF, World Bank and U.S. Treasury, often for guiding reform in developing countries.

increasing trade relations to encourage economic stabilization (Murrell). While each of these economic transition programs for America and post-Soviet countries are different from each other, each one has achieved its goal of improving the country's economy and China's reforms have been particularly unique in comparison to these examples because over time, they have been much more effective in terms of stimulating economic growth.

Zhang underscores the impact of China's economic reform by arguing that China has developed differently than Jacobs had outlined in her theory of city generation. He argues that the government has focused on eradicating poverty by first creating reforms in rural areas, where most of its population lives, and then later working to reform its cities. He says, "change has had a clear pattern: easy reforms first, difficult ones second, rural reforms first, urban ones second; changes in coastal areas first, inland second; economic reforms first, political ones second. The advantage is that experiences gained in the first stage create conditions for the next stage" (Zhang Weiwei). This method of creating reforms to best fit each demographic of people depending on whether they live in a rural, suburban, or urban setting, has been effective in mobilizing people throughout the country and enabling areas to further develop one step at a time. For example, up until ten years ago, the rural population in China was much larger than it is today so the invention of better technology improved farming practices and changed the lives of those living in rural areas. Historically, this situation is similar to the Japanese hamlet discussed previously in Jacobs' work. While China's development during the past decade began with rural reforms, the formation of megacities followed because cities began building up from sharp increases in the production of exports, capital flow, and job openings for workers coming in from the countryside. In context, between 2000 and 2010, urban growth, measured by the percentage of the population moving to cities, has consistently grown by 3% (World Bank).

Zhang underscores that countries looking to eradicate poverty as a way to improve the overall economy and encourage growth need a strong government that is committed to helping the population, providing services to its people, and maintaining the highest level of national security. Relative to other developing nations, such as Russia and South Africa, China in particular has focused on this economic initiative by promoting its growing middle class, which, as previously mentioned, is increasingly living in urban areas. China has been investing in education to create a well-educated population, training its military, and focusing on trade relations. Thus, unlike Jacobs, he thinks the growth process is so complex that there is uncertainty regarding whether cities play a key role in economic development.

## CHAPTER SIX

### CHINA'S GREEN DEVELOPMENT INITIATIVES

While the model of development Zhang outlines has arguably helped China to achieve success, in “Choice for China (part one),” Hu Angang focuses on two of the country’s biggest problems, which are pollution and depletion of resources. He highlights that the country must focus on these issues and argues that “green development is the only way forward” because the population of the country will not be able to survive if it continues to grow without regulating emission levels of pollutants such as coal (Hu).

#### *A. Hu’s Emphasis On Addressing Environmental Issues*

Hu points out how this sustainable development strategy is consistent with the United Nations Millennium Development Goals and sustainability initiatives. One example of a sustainability project that the United Nations Development Program (UNDP) is involved with is putting power lines in rural villages in Afghanistan because the vast majority of the country’s population lives in rural areas and approximately 85% of those people do not have electricity. The UNDP and the Afghanistan Ministry of Rural Rehabilitation and Development have implemented six micro-hydro-power projects and each 14-kilowatt project has benefited approximately 100 families by providing them with access to electrical outlets. This plan to encourage sustainability as an economic growth strategy is hence also very pertinent to China as it is a member of the United Nations and one of the fastest growing countries in the world. For instance, the Three Gorges Dam has promoted economic growth within China by providing energy for over ten different provinces and cities. The dam has 32 turbines and generates approximately 22,500 megawatts of electricity, which is the equivalent of more than 15 coal-burning power factories (Ponseti and Lopez-Pujol). By implementing more large-scale

alternative energy initiatives like the Three Gorges Dam to generate electricity and reduce pollution, China can continue on a path of sustainable development.

In addition to these sustainability initiatives, both the United Nations and Hu anticipate that China will continue to become one of the most powerful in the world. Hu says, “I think that China should rise both peacefully and along the path of green development. Only by sticking to a green development strategy and shifting the growth model to a green development path, is it possible for China to realize its historic rise” (Hu 2006: 1). This passage connects the country’s history with the economics of growth and contends that the most ideal strategy for it to prosper is through policies that will encourage sustainability. In relation to this global green initiative, countries such as Denmark have made sustainable development a major focus for over a decade and as a result have become leaders in renewable energy, namely wind. This goal was achieved by protecting ecosystems, using resources more efficiently, ensuring environmental standards be taken into account in all sectors, and encouraging bicycling and plug-in vehicles as preferred methods of transportation (“Sustainable Development: Denmark’s National Strategy Published”). Denmark thus serves as a model of a country that has prospered from implementing environmentally friendly policies and continues to grow today.

One particular environmental issue that China has to confront with a growth strategy in order to proceed with its path to economic success is the scarcity of natural resources relative to demand for them. This discrepancy between the country’s enormous population and the availability of resources is becoming an increasingly more serious concern and he points out “China’s resources are lower than the world average per capita, yet its losses in natural resources are the biggest in the world” (Hu 2006: 1). In order to address this issue, Hu says that China ought to invest in ecological protection to preserve rural land and potable water sources. He

attributes the tremendous amount of air, factory, and water pollution to fueling this imminent crisis and feels that the national accounting system and World Bank data show trends of natural capital loss relative to GDP for several countries. In terms of GDP levels, loss of natural capital accounted for 30% in the 1970s and 1980s and ultimately, rapid economic development has changed (Hu 2006). Hu illustrates this loss by expressing the need for transition from depletion of resources to the need to cultivate and import new ones. This data serves as a reference point for how China is faring compared with other countries and that it should appropriately adjust the domestic savings rate in order to become more (resource) efficient.

Hu continues his argument for China's need to pursue a sustainable growth path in "Green development: the inevitable choice for China (part two)" by citing the UNDP "China Human Development Report 2002 -- Making Green Development a Choice", which concludes that China should choose to pursue a non-traditional method to control for pollution effects. Differently from his previous work, he argues more fervently that it is not possible for China to continue its former models of capital accumulation by relying on resources from other countries and polluting the environment. Based on this work, China needs to focus on internal reform and must establish a system to deplete fewer resources. Hu states that ideally, this reform should address and work to establish "a social system that ensures social benefit and social equity," encourage innovation and the discovery of new technologies, and protect ecological balance (Hu "Green development: the inevitable choice for China (part two)): 1). He highlights that China is determined to promote economic development and provide the best quality of life for its people, just as a cat is considered to be good as long as it can catch mice. In context, Hu compares China to a black cat because the country has high capital input, low output efficiency and high rates of resource consumption and pollution levels. Given the harmful effects on the environment, the

initiative to turn the proverbial “black cat” to a “green cat” in order to catch mice mirrors China’s need to change its development methods in order to preserve the environment in the future.

### *B. Incorporation of Green Technology in Chinese Society*

In terms of the country’s growth plan, he states that it is important to comply with a strategy that is conducive to its national conditions, namely utilizing its human and natural resources as efficiently as possible. Moreover, Hu believes that China is in a good position for green development. The economic restructuring of the economy and its membership in the WTO is favorable for improving environmental regulation and developing energy-efficient services. The previously mentioned Denmark example shows that a country can set regulations in place whether they entail encouraging bicycling as the preferred method of transportation or using solar panels to generate energy in place of using coal. Additionally, innovation leads to more sophisticated technologies that will reduce pollution and waste. Some examples of this technology are solar panels developed by Suntech Holdings Inc, the world’s third largest photovoltaic solar panel producer and China’s biggest U.S.-listed solar company by market capitalization (“Suntech Power (STP) Rises After Q3 Results and Shipment Outlook (Update)”). As measured in United States dollars, the company made \$435 million in revenue in 2008, and has continued to experience mandates from consumers for its product given global demand for renewable energy sources. This demand is reflected by its shipments of solar modules, which are “2.2 to 2.4 gigawatts in 2011, an increase of 46% over shipments of 1.5 gigawatts in 2010, and 700 megawatts in 2009” (Suntech Holdings). These solar panels are now being used in many construction projects throughout China and act as a way for the Chinese population to use energy and heat from the sun to power electricity instead of pollutants. Thus, this emphasis on

sustainable development and foreign policy has the capability of being very conducive to improving the overall global economy.

Another key component of China's sustainable growth initiative is developing more advanced institutions to enhance communication and transportation. In his paper "Institutions", North presents and analyzes case examples and argues that institutions are important for development because they provide individuals with economic incentives. North makes the argument that the government plays a key role in institutional development, which translates to greater opportunities for economic growth and provides several historical references that successfully demonstrate the positive effects of establishing institutions within a society. One example dates back to hunting and gathering societies when trade relationships began to expand from villages to longer distances via shipping routes. Over time, North states that "the market entails more specialized products" and that "international specialization and division of labor requires institutions and organizations to safeguard property rights across international boundaries so that capital markets can take place with credible commitment on the part of the players" (North 100, 102). This example shows that as trade grew from occurring within small communities to gaining international scope, institutions have helped along the way to safeguard property rights and help economies to benefit from improved transportation. These improvements contributed to the formation of capital markets, which then helped citizens earn money over time.



## CHAPTER SEVEN

### THE EFFECTS OF TECHNOLOGICALLY ADVANCED TRANSPORTATION METHODS ON GROWTH

As major urban centers developed within China, demand for improved transportation methods arose in order to facilitate trade and international relations. In the early 2000s, highways in urban Chinese areas were similar to those in the United States; however, over the past ten years, the infrastructure that connects cities has dramatically changed due to technological advancement.

#### *A. The Relationship Between Improved Transportation and the Chinese Economy*

The development of high-speed railways, which run at a minimum of 124 mph, has expedited domestic economic expansion (China's High-Speed Rail Revolution). For instance, one can travel from Beijing to Tianjin, which are located approximately 117 kilometers apart (73 miles), in thirty minutes. This rail line demonstrates how urbanization and formation of institutions can benefit the economy. Similarly, The Beijing Capital International Airport, the main international airport in Beijing and one of the busiest airports in the world in terms of passenger traffic, has also positively affected transportation within China. In 2008, the airport added a third terminal to accommodate more passengers, making it the second largest airport terminal in the world. This addition enabled more people to come to China for the Beijing Olympics and shows that the country is open to attracting more visitors. Further, this airport has provided more jobs for migrant workers at the airports and with doing construction. One article cites that at a construction site for a new airport in Beijing, "migrant workers, who live in tents on the site, said they had started work last month on the paving and fountains for the monument" (Watts). This example shows that construction has had positive effects on China's economy

because it encourages more visitors to come to the country as well as provides more employment options for the population. Thirdly, the Transrapid Shanghai Maglev Train, the first commercially operated high-speed magnetic levitation train in the world, first opened in 2004 and has since made it easier for passengers to travel between the Shanghai Pudong International Airport and metro lines throughout Shanghai so it helped to integrate undeveloped and developed regions. High-speed rails have become a major initiative of the Chinese government in facilitating better transportation and openness to more visitors. In 2010 alone, China invested US \$107.9 billion in railway construction and is currently working on dozens of railway products. These examples show that as society becomes increasingly urban, the capital markets that North outlined in his work take effect and act as strategies for economic growth.

*B. North's Theory of the Importance of Education in Fostering Growth*

Furthermore, North argues that investment in education also contributes to other forms of institutional development, such as political parties and local government organizations, which can help organize society and positively affect growth. To clarify, in the nineteenth century, he explains that the British Colonial Office advocated for investment in education, which in turn led the educated population to have higher literacy rates and become a more skilled workforce. A benefit of having a more educated labor market is that it can also lead to more output and goods that can be either sold domestically or exported abroad. North hence underscores that in his view, what makes institutional evolution a successful strategy for growth is trade, state-level development, enforcement of property rights, and economic activity.

## CHAPTER EIGHT

### DATA ANALYSIS

#### *A. Data Introduction*

The scholarly interpretations and historical background that I collected from the World Bank and other sources are being used to determine how effective international trade, import-substitution, credit markets, international financing via capital and markets and several other variables have been in contributing to the growth of China relative to other developing and developed countries. With regard to the formerly discussed publications, the literature review suggests that some of the biggest drivers of growth would be trade, investment in infrastructure and human capital, credit markets and technological advancement. Other growth factors such as politics, population control, culture, and strategic plans for the future cannot be quantified but could also potentially play a significant role in China's development. The historical relevance of these topics will also be included in the data analysis.

#### *B. Data Analysis*

For Indonesia, Japan, and Thailand, import and export levels have risen and fallen throughout the twenty-year period tested in the data set; but it appears that there are likely other factors affecting the data results based on the way the data is scattered. After 1990, annual GDP per capita growth has remained under 10% and its export and import businesses have all remained in positive growth territory with a few exceptions that mainly occurred in 2001 and 2009. With regard to agriculture, it appears that annual growth is highly correlated with GDP per capita growth so abundance of agricultural goods tends to rise when the economy expands and fall when the economy weakens. Net national savings has consistently risen since 2005 and decreased closer to 2010, indicating that there is a moderately strong correlation with GDP per

capita growth; hence, the country's income, without consumption and government purchases, has generally followed a similar growth trend as China to achieve GDP expansion. This result may be the case because when the economy is strong, consumers purchase more goods and services and when the economy is weak consumers behave accordingly as well by spending less money. Increased trade could also affect the country's income levels. Population growth does not overall appear to be very correlated with GDP per capita as it has remained at consistently low levels between 0-2% throughout the last twenty years regardless of annual changes in GDP growth rates.

Overall, during this time frame, the percentage of imports and exports growth is correlated with annual GDP per capita growth rates as well as agriculture in terms of value-added growth, which appears to be correlated with GDP expansion. Net national savings consistently rose in these countries, indicating each one gained more income during the 1990-2010 time frame to help its domestic economy prosper and population growth declined relative to annual per capita GDP growth rates. In particular, Japan's population has been stagnating for several decades as birth rates have declined. As compared with China, the BRICS nations have experienced a similar growth pattern in a sense that they are all somewhat correlated with import, export, agriculture and rising net national savings. The One Child Policy can largely explain China's population decline, and it differs from these other countries because its export levels have been less correlated with annual GDP growth. Another factor that could affect population growth for these four countries as well as China is that when living standards rise, people do not tend to have as many children because they do not need the benefits of social savings. Thus, as can be seen by the data over the twenty-year span, birth rates tend to drop under these conditions.

For Cambodia and Korea, imports and exports of goods were generally somewhat correlated with annual GDP per capita growth between 1990-2010. Agricultural growth appeared to be very uncorrelated with annual GDP expansion, which suggests that agricultural rights lack subsidization and may not be very enforced there, regardless of whether the economy is strong or weak. Since around 2000, net national savings appear to have increased so the countries' incomes, without consumption and government purchases, have steadily risen over the past decade. In particular, Cambodia's savings have greatly increased over the past decade, which indicates that the country is in a favorable position for future economic growth.

The percentages of import and export growth in Indonesia and Vietnam have largely been uncorrelated with annual GDP growth over the past few years. Agriculture, as measured by value added percentage growth, appears to be very correlated with GDP growth in Indonesia but not as relevant for Vietnam. This result may imply that global agricultural rights, such as the ability to export freely, are enforced differently in these two countries or that there may be another underlying factor. The net national savings rate for Indonesia appears to be very uncorrelated with GDP growth but for both Vietnam and Indonesia the net national savings has risen over time, indicating that both countries have increased their incomes and living standards for inhabitants. However, both have experienced a steady decline in population growth over time, similar to China, which is likely due to the aforementioned social savings reasons. The general relationship between China and Vietnam/Indonesia is that these three countries overall followed the same trends in terms of its exports and imports being positively correlated with annual per capita GDP growth; however, China's exports have grown at a more rapid pace than in Indonesia and Vietnam. In context, Indonesia and Vietnam are suppliers of food and other raw materials,

so they therefore have contributed to China's production process as well as to processes in other advanced countries.

In addition to its Asian trade partners, China is also considered to be a part of the BRICS theory, which was published by Goldman Sachs executive Jim O'Neill. The theory states that Brazil, Russia, India, China, and South Africa are the fastest advancing economies in today's world. As compared with China, the annual percentage growth for Brazilian imports and exports are relatively similar and correlated with annual per capita GDP growth. Since Brazil is also a very export-driven economy, it is not surprising that this similarity with China's import and export growth exists. Interestingly, the value added annual percentage growth of Brazil's agriculture is not as high or as correlated as China's levels during the past two decades.

Population growth followed a similar pattern to China's growth as the population has continued to decline over time; however, since the One Child Policy does not exist in Brazil, there must be an explanatory factor that is not accounted for by the data. Net national savings growth has continued to decline over time, which shows that while the country is growing rapidly like China, the savings rate is the opposite of China's so the country is not investing much of its wealth into its own economy. Indian imports and exports are correlated with GDP growth in a sense they are generally rising over time with a few ups and downs. Generally speaking this follows the same trend in China. However, as compared with China, agricultural growth is very uncorrelated with GDP, which means that world agricultural rights are likely not as enforced in India as they are in other countries. Population growth does not appear to be as correlated with GDP growth but like China, it is steadily declining. This decline may be due to a high birth and death rate, which offset each other. The net national savings rate appears to be very correlated with GDP growth just as it is in China and is also consistently rising over the past decade. Lastly,

South African exports and imports growth is very correlated with GDP growth and both sets of data experienced negative growth before rising back up to positive levels in 2010. This volatility is similar to China but not as correlated. Net national savings was up and down throughout the twenty-year period but now it is rising again, similar to China's pattern of savings growth. Unlike China, population growth was rising, then declined, and is now rising again but does not appear to be very correlated with GDP growth.

According to the U.S. Department of Commerce, China's trade surplus with several of its biggest trading partners, as measured in millions of US dollars, has consistently increased between 1995-2002 (Table 3).<sup>7</sup> In particular, its trade surplus with Hong Kong and the United States has risen 74% and 497%, respectively (Department of Commerce). China had a significant trade deficit with Canada in 1995 and then increased 70% to having a \$677 million trade surplus by 2002 (Department of Commerce). These numbers indicate that China has been called the world's workshop because it has exported many more goods and services to these countries than it has imported, which resulted in a great deal of income for the country and lends empirical support to the theory behind its export-driven economy.

While China has a trade surplus with many of its biggest trading partners, there are still countries such as Taiwan, Korea, and Germany that play a critical role in international trade with which China had a trade deficit (as of 2002). China's trade deficit with Taiwan nearly tripled between 1995-2002 and its trade deficit with Korea and Germany grew approximately 10% each year during that time period.<sup>8</sup> Notably, China had a trade deficit with Saudi Arabia, the world's largest supplier of oil, as well as with Brazil, one of the fastest growing economies in the world and a global supplier of commodities such as beef. These statistics show that China has

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<sup>7</sup> There is no direct hyperlink available for this data on the U.S. Department of Commerce website.

<sup>8</sup> [http://info.worldbank.org/etools/wti/docs/Taiwan,%20China\\_taa.pdf](http://info.worldbank.org/etools/wti/docs/Taiwan,%20China_taa.pdf)

consistently maintained good relationships with its suppliers of raw materials but has not benefited from exporting more goods and services than it has imported there.

These results indicate that China's export-driven economy began to take off into the early 2000s and since then it has increased its trade surplus with some of the biggest players in the international trade arena, namely the United States, Hong Kong, and European Union members. According to the Table 4 Statistical Yearbook for Asia and the Pacific, between 1990 and 2007, the adult literacy rate, as defined by the percentage of China's population age 15 and over who can read and write, rose 20% from 77.8% to 93.3% ("Survival Rate To The Last Grade Of Primary Level And Literacy [Asia And The Pacific: By Country, World Region, And Economic Grouping, Selected Years, 1989-2007]": 111). This figure excludes Hong Kong and Macau though Macau's literacy rate for this group of people is 93.5%, which is a slightly higher level than in mainland China. As of 2007, East and North-East Asia had the highest literacy rates for this demographic of people behind North America, Europe, and North and Central Asia. These statistics indicate that the economies of China and Korea have greatly improved in terms of the quality of life for their inhabitants over the past two decades. Both the literacy figures and the large number of people in China who have been lifted out of poverty and are now part of the growing middle class exemplifies the country's remarkable economic improvement over the years. However, it is important to note that North America, Europe, and North and Central Asia all have had adult literacy rates over 99% for the past ten years so China still has a lot of educating to do for its enormous population in order to sustain these same literacy levels.

The data for Hong Kong, Singapore, and Sri Lanka shows that import and export growth is fairly correlated with annual GDP per capita growth. This data suggests that as these economies expand, trade increases both in terms of exports of goods and services to trading



partners and in terms of the number of imports from these countries. These results are consistent with China's growth. Agricultural rules do not appear to be as correlated with economic growth for these countries as Hong Kong and Singapore, which tend to export more sophisticated products than commodities. Unlike in China, the populations for these countries continue to rise and are relatively correlated with GDP growth. This rise could be due to the fact that Hong Kong and Singapore are rapidly expanding economically but do not have the restraints of the One Child Policy that has affected its major trading partner, China. Smaller countries that are in close geographic proximity to China, such as Bhutan, Lao, Kyrgyz, and Malta, all generally appear to be uncorrelated with China's import, export, agricultural growth as well as the pattern of net national savings and population dynamics. While several of the aforementioned countries can be considered city states and Hong Kong is technically controlled by China, Singapore in particular has been encouraging population growth since the late 1980s, when birth rates had fallen to very low levels. Thus, it has the opposite problem from China in terms of population growth.

While American economists were encouraging China to adopt a more capital market-based financial system and move away from bank lending, the 2010 results of the “Financing via International Capital Markets (Gross Inflows, % of GDP)” data in Table 6 tell a different story (World Bank).<sup>9</sup> The sum of China's bond issuances, bank lending, and new equity placement is lower than that of Russia and Kazakhstan but higher than that of Cambodia, Japan, and the world on average. These trends indicate that Kazakhstan, which was the leader in this type of financing from 2002-2008, fell below Russia in 2009 while China appears to have maintained a steady progressive pace in terms of its financing via international flows. These trends indicate that China could overtake these other two countries going forward, particularly through its bank lending.

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<sup>9</sup> This chart was created on the World Bank website and does not have an accompanying hyperlink available.

In terms of outstanding loans by commercial banks, China has increasingly made more and more of them between 2004-2009 (Table 5).<sup>10</sup> This data shows that Chinese consumers are taking out more loans over time to finance the purchases of goods and services and reportedly the state-owned enterprises (SOEs) are recipients of many loans. Other countries that have a larger number of outstanding loans include India, Indonesia, and Russia, which shows that some of China's trading partners historically have more credit market activity. Most notably, the United States, Brazil, and the United Kingdom all have smaller amounts of outstanding loans, which could in part be due to increased government regulation regarding bank loans.

Furthermore, the U.S. and England have also had very active direct finance markets, and big banks have had some issues with profitability and market share.

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<sup>10</sup> There is no direct hyperlink available on the International Monetary Fund website for this data.

## CHAPTER NINE

### CONCLUSIONS

In concluding this paper and determining the major underlying factors of China's economic growth over the past decade from both an economic and cultural perspective, some strategies discussed in the literature review appear to be relevant while others do not appear to be.

#### *A. Combined Analysis of Literature and Data Reviews*

First, the scatter plot data for the Asian countries and BRICS nations supports Jacobs' theory of import substitution because in looking at the BRICS countries exports levels, the numbers show that they have risen over the past decade. The statistics indicate that these economies are shifting from importing less to producing more of their own products and services to export abroad. Export data also generally appears to be correlated with annual GDP per capita growth, which suggests that it plays a significant factor in the growth over this time period. For China in particular, exports have overall remained at a higher level of growth than imports and while there appears to be some volatility in 2008-2009, the export growth rate has remained above 20% for most of the past decade.

Looking at the graphs from all the countries, it seems that this export growth has been true for these other countries as well, particularly the BRICS countries that represent the fastest growing economies. Based on the data analysis and the literature written by Jacobs outlining what the process of import substitution entails, it appears that her theory of import substitution has been a very relevant theory for China's economic growth during the past decade.

Jacobs also discusses China's trade with the US and how it connects with the country's export-driven growth. The table on page 6, which shows China's trade with the US and US

Exports to China statistics, reveals how many billions of dollars in exports there are between China and the US and how this number has continued to grow during the past ten years. The literature review highlighted that in the 1980's, Japan was one of the fastest growing economies and had established a strong trading relationship with large economies like the United States, which helped to benefit both nations. This trading relationship was based mainly upon the fact that Japan was producing sophisticated, high-demand technology at lower costs than America and Europe. The data on China's trade surpluses also lends support to this theory of import substitution and increased trading being major drivers of China's growth. For instance, China's trade surpluses with some of its biggest trading partners, such as Hong Kong, the United States, and Europe, have all grown in terms of millions of dollars during the 1995-2002 time frame. These numbers demonstrate that its relations with the world's most developed economies have strengthened over time. Forging relationships with these high-consuming economies by exporting goods and services to them thus appears to be another instrumental factor for China's growth miracle.

The literature also discusses the significance of multilateralism and positive relations with nearby countries and how they can help to strengthen a country's trade results. For example, export and import levels are rising in the past few years in Russia and Singapore, which are both relatively close to China in terms of geography. This data suggests that since trade levels have risen over time relative to annual GDP per capita growth rates, these countries are following China's pattern of economic growth and are likely increasing their trade levels with China and the other BRICS nations. This result distinctly makes sense even though the economics of Russia and Singapore are very different because Singapore has had a modern economy for a long time while Russia had an extensive period of relative stagnation.

While countries such as Russia, Singapore, and Vietnam have had increasing trade surpluses with China, some of the smaller countries that are closer in proximity to China appear to be slower in terms of establishing positive relations with the country (in terms of Chinese imports). As of 2002, China had trade deficits with Taiwan, Korea, Japan, Malaysia, and Thailand, indicating that while it was making progress exporting more goods and services to big economies, smaller countries, where these products may be less expensive to produce, were still exporting more to China than they were importing in the early 2000's. With regard to Japan and Korea, which are both large economies, it is possible that since they already have highly developed manufacturing sectors, they can therefore provide their own domestic populations with a variety of products instead of relying on imports from China. According to the scatter plot graphs for Korea and Malaysia in particular, import and export growth levels have risen quite a bit in the late 2000's so their similarity to China's growth has increased over time as well as the likelihood of their developing stronger trade relations with each other.

Desrochers and Hospers discussed a theory of human capital and how it has contributed to economic growth. The root of this human capital is education because China's innovative thinkers are the inventors of construction projects, such as the Three Gorges Dam, which have tremendously contributed to improvements in the quality of life of those around them. As discussed on pages 9 and 15, China has gone through several reforms in the past fifteen years to improve its national education system and this push to improve educational standards for this generation of Chinese students is reflected in large-scale projects like the Three Gorges Dam, which serves as an example of a project that has helped to drive growth in the past. Literacy rates data supports this theory that human capital has contributed to China's economic prosperity

because the percentage of the population ages 15 and above who can read and write has risen dramatically between 1990 and 2007.

Further, Jacobs' theory that it takes more than labor and capital to promote economic growth shows how a rise in literacy rates, representing improved educational standards, has contributed to China's economic success. Other ways that education has impacted society based on the literacy rates is that engineers have invented more plans to improve society through the development of better transportation technology. The state-of-the-art subway system and the aforementioned Hangzhou Bay Bridge have changed the lives of millions of Chinese citizens because they can move from one location to another much more efficiently.

This same rise in human capital, as represented by literacy rates, has been shown to influence China's growth. For instance, improved education has led Chinese entrepreneurs to start new companies and open itself up to the global online marketplace. Companies such as Taobao, which have been tremendously successful and continued to prosper over the years, is the result of computer scientists and engineers continually brainstorming new ideas to promote the companies through new product selection, better online service to customers, and increasing advertisement revenue. As China's middle class has continued to grow, there is more potential for those citizens to become active Internet users, which is a major catalyst for the growth of these companies going forward. Thus, entrepreneurship as a result of improvement in educational standards has grown over time and contributed to the Chinese economy's welfare as a whole. Related to the improvement in education, while there is not a great deal of statistical evidence supporting North's claims about political parties and local government organizations, he discusses how education can lead to the development of these two groups that can create better laws to rule society and improve quality of life for Chinese citizens. Thus, even though

this theory may possibly be relevant for the Chinese economy, there is no empirical data to support these claims.

Another theory discussed is China's membership into the WTO and how it has helped the country to facilitate trade relations with other member countries. The scatter plot data for countries that are members of the WTO, except for Bhutan, Kazakhstan, and Russia, all have higher export and import growth levels than countries that are not part of the Organization. This theory behind China's growth appears to be relevant for other developing and developed countries as well and thus is important in explaining China's recent growth since joining the WTO in 2001.

While the WTO seems to have positively affected China's development by connecting it with other trading partners and implementing trade regulations that are based on the data analysis, it is unclear exactly how its intellectual property rights and other similar governmental initiatives have affected economic growth. Hence, even though China has joined organizations that help to regulate it, there are still many aspects of its economy that are unregulated, or at least have not been regulated in the past as they have been in other parts of the country during the past twenty years. Hence, these theories cannot be considered pertinent for fostering China's growth.

In terms of sustainability initiatives, such as the United Nations Millennium Development Goals and the completion of the Three Gorges Dam, a lot of energy has been saved and has helped to improve the lives of Chinese citizens. The data for percentage growth of value added agriculture suggests that agriculture is very correlated with economic growth in China and this trend is true for several other developing nations. Hence, sustainability initiatives and efforts to maintain agricultural growth appear to be significant for China's economic growth.

With regard to credit market data, as represented by the number of outstanding loans made by commercial banks, Chinese consumers are taking out more loans over time to finance the purchases of goods and services and the SOEs typically receive many of these loans. The data indicated that India, Indonesia, and Russia had more outstanding loans than China, which demonstrates that some of China's trading partners have had more credit market activity than it has in the past. Hence, outstanding loans have played a role in helping China to develop; however, relative to other countries with growing economies, it has not been instrumental to promoting growth.

In terms of capital markets, Jacobs discusses grant programs and tax sharing systems with localities to regulate trade and prevent economic or political crises from affecting the economy. The data and historical analysis included in this paper does not indicate that either of these programs have been significantly influential in helping China to develop over the last ten years, particularly relative to other factors such as trade and joining the WTO. Overall, it does not appear to be an important theory in explaining China's growth.

Lastly, population is a variable that ranges across developing countries. Since China instated a family planning policy, there has been a consistent slip in its population growth. This statistic has varied widely for different developing nations; for instance, India has a very high overall birth rate that is offset by a very high overall mortality rate so it is difficult to determine whether population growth directly affects economic growth or if other variables have biased the results. In China's case, the one conclusion that can be drawn for this variable is that the decline in population has helped the country to make strides towards educating and feeding its large population, which until recently was thought by economists to be an unattainable goal. Therefore, it has played a role in encouraging China's recent economic prosperity.



*B. Determination of the Relevance of Different Strategies for China's Recent Growth Process*

Overall, based on the theories that have been proposed by various economists and Chinese scholars relating to economic growth and the data collected to provide statistical evidence for some of these theories, one can conclude that international trade, import substitution, foreign policy with neighboring countries and BRICS nations, human capital, rise in educational standards, and joining the WTO and policies relating to population dynamics appear to be the most relevant in explaining China's tremendous economic growth phenomenon throughout the last decade. Factors such as capital markets, grant programs, tax sharing systems, credit markets, and the development of institutions such as political parties and government organizations lack the empirical data to show that they have been particularly instrumental to China's growth in the past ten years.

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**Table 1. China's Top Exports to Foreign Countries in 2010 as Measured in Billions of Dollars.**

**Table 5: China's Top Exports, 2010 (\$ billion)**

<b>HS#</b>	<b>Commodity description</b>	<b>Volume</b>	<b>% change over 2009</b>
85	Electrical machinery and equipment	388.8	29.1
84	Power generation equipment	309.8	31.4
61, 62	Apparel	121.1*	20.5*
72, 73	Iron and steel	68.1*	44.1*
90	Optics and medical equipment	52.1	34.0
94	Furniture	50.6	30.0
28, 29	Inorganic and organic chemicals	43.2*	34.9*
89	Ships and boats	40.3	42.1
87	Vehicles, excluding rail	38.4	37.5
64	Footwear	35.6	27.1

\*Calculated by USCBC

Source: PRC General Administration of Customs, *China's Customs Statistics*

**Table 2. US Exports and Imports Statistics to China During 2001-2011 as Measured in Billions of Dollars.**

## US-China Trade Statistics and China's World Trade Statistics

**Table 1: China's Trade with the United States, 2001-11 (\$ billion)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
US exports	19.2	22.1	28.4	34.7	41.8	55.2	65.2	71.5	69.6	91.9	103.9
% change*	18.3	14.7	28.9	22.2	20.5	32.0	18.1	9.5	-2.6	32.1	13.1
US imports	102.3	125.2	152.4	196.7	243.5	287.8	321.5	337.8	296.4	364.9	399.3
% change*	2.2	22.4	21.7	29.1	23.8	18.2	11.7	5.1	-12.3	23.1	9.4
US balance	-83.0	-103.1	-124.0	-162.0	-201.6	-232.5	-256.3	-266.3	-226.8	-273.1	-295.5

Notes: \*Calculated by USCBC. US exports reported on a free-alongside-ship basis; imports on a general customs-value basis.

Source: US Department of Commerce; US International Trade Commission (ITC)

**Table 2: Top Ten US Exports to China, 2011 (\$ billion)**

HTS #	Commodity Description	Volume	% Change Over 2010
84	Power generation equipment	10.8	9.70%
12	Oil seeds and oleaginous fruits	10.7	-3.10%
85	Electrical machinery and equipment	7.2	-16.60%
87	Vehicles, excluding rail	6.4	55.60%
88	Aircraft and spacecraft	6.3	10.80%
90	Optics and medical equipment	5.2	8.30%
39	Plastics and articles thereof	5	7.20%
47	Pulp and paperboard	3.8	27.10%
74	Copper and articles thereof	3.7	32.70%
29	Organic chemicals	3.5	17.80%

\*Calculated by USCBC

Source: ITC